

REMARKS

This is a full and timely response to the Office Action mailed August 16, 2006.

By this Amendment, claims 1 and 3 have been amended to more particularly define the present invention. Further, new claims 13-15 have been added to further protect specific embodiments of the present invention. Support for the claim amendments and new claims can be readily found variously throughout the specification and the original claims, see, for example, original claim 3 and page 7, lines 18-23, of the specification. Thus, claims 1-15 are currently pending in this application.

In view of these amendments, Applicant believes that all pending claims are in condition for allowance. Reexamination and reconsideration in light of the above amendments and the following remarks is respectfully requested.

Rejections under 35 USC § 103

Claims 1 and 3-5 are rejected under 35 U.S.C. §103(a) as allegedly being obvious over Bonmati (U.S. Patent 4,230,464) in view of Modell (U.S. Patent 3,455,817). Further, claims 2, 6 and 7 are rejected under 35 U.S.C. §103(a) as allegedly being obvious over Bonmati in view of Modell and further in view of Shoemake (U.S. Patent 3,624,986). Lastly, claims 8 and 9 are rejected under 35 U.S.C. §103(a) as allegedly being obvious over Bonmati in view of Modell and further in view of Applicant's admitted prior art (page 2, lines 15-19, of the present specification) and in view of Skoog ("Principle of Instrumental Analysis"). Applicant respectfully traverses these rejections.

To establish a *prima facie* case of obviousness, the following three criteria must be satisfied. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations. Here, in this case, Bonmati and Modell in combination with Shoemake, or Applicant's admitted prior art and Skoog fails to teach or suggest all the claim limitations with particularly emphasis on the limitation "*wherein said buffer tank has a suction port opened to outside, and a discharge port connected to said air pump so that the air sucked by said air pump through said buffer tank is sent to said gas separation column through said gas flow channel*".

In the Office Action, the Examiner indicates that Bonmati teaches a recirculation gas chromatograph (1) comprising a gas separation column (1), air pump (6), buffer tank (11) having an end (21) opened to the outside opposite from the end connected to the pump, gas purifier (17), and flow sensor upstream of the filter, but fails to teach the details of the chromatographic sample entry and detector units. To address this deficiency in Bonmati, the Examiner cites Modell which teaches a recirculation gas chromatograph having a port (14) for sample (10) entry downstream of filtered carrier gas (12) and a detector (20) downstream of the column (16). The Examiner argues that it would have been obvious for a person skilled in the art to use the chromatographic sample entry and detector of Modell in the recirculation gas chromatograph of the Bonmati. However, based on Applicant's review of the cited references, Applicants strongly disagree with the Examiner's understanding of Bonmati.

The invention of Bonmati is directed to recycling a carrier gas such as hydrogen (see Example 1 of Bonmati) from the trapping system to the inlet of a gas chromatograph separation unit. The exit carrier gas from the chromatograph unit (1) is sent to the trapping system (2), and then the carrier gas derived from the trapping system (2) is passed into the damping buffer tank (5) to reintroduce the carrier gas into the chromatograph unit (1). Thus, when a large amount (e.g., 4m³ per hour) of hydrogen is used as the carrier gas, the method of Bonmati is useful to save the consumption of the carrier gas, and prevent air pollution.

In contrast, the primary concern of the present invention is to provide a reliable gas chromatograph analysis by stabilizing the base line of a detector in the case of using the outside air as the carrier gas. That is, as described on page 8, lines 6-14, of the present specification, the buffer tank (20) has the capability of retaining a larger amount of the air, i.e., the carrier gas, than the amount of the air supplied per unit of time into the gas separation column by the air pump. As a result, a flow of the air sucked from the outside through the suction port (20a) is weakened to make its concentration uniform in the buffer tank (20), and then sent to the gas separation column 1. In other words, the contamination of the air can be diluted by allowing the air to pass through the buffer tank. Therefore, it is possible to prevent baseline fluctuation of output of the detector 30. In addition, since the carrier gas is the air, the present invention does not need such a recycling system of Bonmati.

It is also important to note that the Examiner regards the buffer tank (11) of Bonmati as corresponding to the buffer tank (20) of the present invention, and the compressor (6) of Bonmati as corresponding to the pump (P) of the present invention. However, from Applicant's

review of Bonmati, it is clear that the buffer tank (11) and the compressor (6) of Bonmati are not used **to suck the outside air into the buffer tank (20).**

Thus, for the above-described reasons, it is clear that the gas chromatograph of Bonmati (for the purpose of purifying and recycling carrier gas such as hydrogen) is structurally different from the present invention having the purpose of preventing the baseline fluctuation of output of the detector and improving the reliability of analysis. In other words, the combination of the cited references fails to teach or suggest all the limitations of the claims (i.e. *“wherein said buffer tank has a suction port opened to outside, and a discharge port connected to said air pump so that the air sucked by said air pump through said buffer tank is sent to said gas separation column through said gas flow channel”*).

In addition, the deficiencies of Bonmati and Modell are not cured by the teachings and suggestions of Shoemake, Applicant's admitted prior art, and Skoog since they have only been cited to teach a flow sensor and controller, and a microprocessor for comparing retention time. Therefore, Applicant believes that even when Bonmati and Modell are combined with Shoemake, Applicant's admitted prior art, and Skoog, the claimed invention cannot be derived therefrom.

Thus, for these reasons, withdrawal of these rejections is respectfully requested.

CONCLUSION

For the foregoing reasons, all the claims now pending in the present application are believed to be clearly patentable over the outstanding rejections. Accordingly, favorable reconsideration of the claims in light of the above amendments and remarks is courteously solicited. If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the below-listed number.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-0013, under Order No. HOK-0243 from which the undersigned is authorized to draw.

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Respectfully submitted,

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Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge Deposit Account No. 180013 for any such fees; and applicant(s) hereby petition for any needed extension of time.
